

## **REMARKS**

### **Amendments to the Specification**

The specification has been amended to correct the drafting error in numbering the steps of the examples of input sequences. No new matter is added.

### **Amendments to the Claims**

Claims 1-25 and 42-56 remain in this application. Claims 1, 3, 9 and 16 have been amended. Claims 42-56 have been added. Claims 1, 16 and 53 are independent claims.

In the Office Action dated January 30, 2006: claims 1, 4, 6-8, 10, 14-20, 23 and 25 were rejected under 35 U.S.C. 102(e) as allegedly being anticipated by U.S. Patent No. 6,575,908 to Barnes et al.; claims 2-3, 5, 9 and 13 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Barnes et al.; claims 11-12 and 21-22 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Barnes et al. in view of U.S. Patent Application Publication No. 2003/0156283 to Jung et al.; and claim 24 was rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Barnes et al. in view of U.S. Patent No. 5,303,148 to Mattson et al.

In response to the rejections, Applicants have amended independent claims 1 and 16, as well as various dependent claims, and have added claims 42-56, in order to more clearly distinguish the claimed invention from the cited prior art.

Claims 1 and 16 have been amended to specify: the size and shape of the head and handle of the intraoral data input tool; the rigidity of the tool; and the requirement for the comfort of the patient when the tool is used in the patient's mouth. Support for these amendments can be found throughout the specification, as originally filed. All references in this paragraph will be to Applicants' published application, US 2005/0221252 A1. For example, the size and shape of the head and handle of the intraoral data input tool are discussed in paragraphs 21, 93 and 97, and examples are seen in figures 1-4, 6-7 and 9-12. The rigidity of the tool is discussed in paragraph 59, and the requirement for comfort of the patient during use of the tool in the patient's mouth is discussed in paragraph 21. Claim 3 has been amended to provide more detail of the extrusion, as described in paragraph 93. Claim 9 has been amended to more clearly describe the positions of the mirror and data input device of the claimed embodiment as being on opposite sides of the discoid head, as described in paragraph 95.

New claims 42-56 were added to provide more detail of the intraoral data input tool. Support for these new claims may be found in various locations within the specification as originally filed. All references in this paragraph will be to Applicants' published application, US 2005/0221252 A1. For example, claims 42 and 43 are based on the embodiments of the invention shown in figures 6 and 7 and discussed in paragraphs 57 and 58. Claim 44 describes the handle as being approximately 13 cm in length, as described in paragraph 21. Claim 45 includes a description of the head found in paragraph 25 and shown in figures 2 and 3. Claims 46 and 47 describe the position of the handle relative to the head

as shown in figures 2 and 3. The tool of claim 48 is shown in figure 10 and described in paragraph 63. Claim 49 is based on the embodiment of the tool with a c-clamp as shown in figures 2 and 3 and described in paragraph 25. Claims 50-52 describe aspects of the stylus shown in figure 8 and described in paragraph 60. New independent claim 53 is based closely on claim 1, as originally filed, with the addition of more detail of the head. The details of the head found in claims 53, 55 and 56 are based on embodiments of the invention shown in figures 6 and 7 and discussed in paragraphs 57 and 58. The platform with push buttons in claim 54 is shown in figure 9 and described in paragraph 61.

In view of the amendments and the remarks that follow, Applicants respectfully assert that the claims are in a condition for allowance.

A. Patentability of Amended Independent Claims 1 and 16

Claims 1 and 16 have been amended to provide more detail of the head and the handle of the intraoral data input tool. In order for the tool to be comfortable when used in a patient's mouth, and for the tool to be ergonomic for use by a dentist or hygienist, the tool is required to have a certain size and shape. These requirements are described in Applicants' published application, US 2005/0221252 A1, in paragraphs 21, 93 and 97 and shown in many of the figures.

Applicants' generally cylindrical handle with a diameter much smaller than its length is shown clearly in figure 6. The cylindrical handle meets the ergonomic requirement for use by the dentist or hygienist (see paragraph 21). The ergonomic requirements include:

the handle be designed to resist unwanted rotation of the head during data input by a stylus acting on the head; and the handle can be gripped by the dentist or hygienist with minimal resultant hand fatigue. Barnes et al. do not disclose a generally cylindrical handle with a diameter much smaller than its length, configured to be held between the thumb and first and second fingers, and attached at one end to the head. Furthermore, Barnes et al. provide no motivation to pursue Applicants' handle design, and fail to suggest the desirability of Applicants' handle design. Barnes et al. disclose an ultrasound system designed "such that a user may hold the balance body and operate a key control element, such as a D-controller, with the same hand." See column 3, lines 51-57 and Fig. 1A which shows a balance body 100, handle 114 and D-controller 112. The design objective of Barnes et al. provides no motivation to change the shape or size of the handle to meet the requirements of Applicants' claimed invention.

Applicants' claimed generally flat and thin head with a largest dimension of approximately 2.5 centimeters or less is required for the comfort of the patient when it is being used in the patient's mouth, as described in paragraph 21 of Applicants' published application. Applicants' claimed head includes a data input device and is rigidly attached to the handle. Barnes et al. do not disclose a head which is generally flat and thin with a largest dimension of approximately 2.5 centimeters. Furthermore, Barnes et al. only describe an ultrasound system for use by a physician. See column 1, lines 25-28 and lines 47-49. Barnes et al. do not discuss dental tools and do not discuss the use of diagnostic tools in a patient's mouth; Barnes et al. do not address the design issues associated with

the comfort of a patient when a diagnostic tool is used in the patient's mouth. Consequently, Barnes et al. do not provide any motivation for, or suggest the desirability of, changes in the size and shape of the head of their diagnostic tool for use in a patient's mouth.

In view of the above remarks, Applicants respectfully assert that claims 1 and 16 and their dependent claims are allowable over Barnes et al.

B. Patentability of Dependent Claim 2

Further consideration will now be given to the patentability of dependent claim 2. Claim 2 describes the head as being discoid. Applicants' published application describes a discoid head as being a preferred embodiment since it satisfies the requirement that the tool be comfortable for a patient when used in the patient's mouth. See paragraph 21 of Applicants' published application. The Office action states that Barnes et al. do not disclose a discoid head, but argues that a change in shape to a discoid head is obvious, being within the level of ordinary skill in the art. Applicants assert that such a change in shape is not obvious for the following reasons. Firstly, the discoid shaped head is desirable for the comfort of the patient, as described above. Secondly, Barnes et al. do not provide any motivation for, or suggest the desirability of, a discoid head. Thirdly, Barnes et al. describe an ultrasound device for use by a physician and do not discuss dental tools, or tools to be used in a patient's mouth. For a fuller discussion of these

issues see the section above on the patentability of independent claims 1 and 16.

In view of the above remarks, Applicants respectfully assert that claim 2 is allowable over Barnes et al.

C. Patentability of Amended Dependent Claim 3

Further consideration will now be given to the patentability of dependent claim 3. Claim 3 has been amended to more clearly describe the extrusion. The shape and location of the extrusion on the head are determined by its function in improving the stability of the tool during data input, as described in Applicants' published application, paragraph 93. Barnes et al. do not disclose such an extrusion. Furthermore, Barnes et al. do not recognize or address the question of stability of the head during data input by operation of a stylus on the head. Consequently, Barnes et al. do not provide any motivation for, or suggest the desirability of, an extrusion on the head to improve stability of the head during data input.

In view of the above remarks, Applicants respectfully assert that claim 3 is allowable over Barnes et al.

D. Patentability of Dependant Claim 7

Further consideration will now be given to the patentability of dependent claim 7. In the Office Action it is stated that the screen 110 acts as a mirror. Applicants respectfully disagree, for the following reasons. Firstly, Barnes et al. do not disclose a screen which is a mirror. Secondly, Applicants assert that a display screen does not function as a mirror for the purposes of a dental tool. (A dental mirror is needed in order to properly examine a patient's upper teeth. See Applicants' figure 1 and paragraph 21 of the published application. Applicants' figure 10 shows a dental tool of the invention with a display 1014 and a touch sensitive screen 1019 on the top surface of the head; yet, in paragraph 95 of Applicants' published application it is stated that the tool of figure 10 benefits from having a mirror on the lower surface of the head (the inference being that the screen 1019 and display 1014 do not act effectively as mirrors for examination of a patient's teeth).) Furthermore, Barnes et al. provide no motivation for, and do not suggest the desirability of, including a mirror on the head of the tool.

In view of the above remarks, Applicants respectfully assert that claim 7 is allowable over Barnes et al.

E. Patentability of Amended Dependant Claim 9

Further consideration will now be given to the patentability of dependent claim 9.

Claim 9 has been amended to more clearly describe the configuration of the head – with a data input device on one flat surface and a mirror on the other, opposite, surface of the discoid head. Barnes et al. do not disclose a mirror and do not disclose such a configuration of a mirror and a data input device. Furthermore, the devices disclosed in Barnes et al. are all configured such that displays and input devices are on only one side of the head (and are not found on both the front and back surfaces). See Barnes et al. figures 1-18.

The discussion regarding the patentability of dependant claim 7 applies here.

Please note that in the office action it is merely stated that claim 9 is rejected under 35 U.S.C. 103(a); however, the grounds for this rejection are not specified.

In view of the above remarks, Applicants respectfully assert that claim 9 is allowable over Barnes et al.

F. Patentability of Dependant Claims 15 and 17

Further consideration will now be given to the patentability of dependent claims 15 and 17. The Office Action states that the stylus 122 of Barnes et al. is capable of functioning as a dental probe. Applicants respectfully disagree for the following reasons. Barnes et al. do not disclose the use of the stylus 122 as a dental probe. Barnes et al. do not disclose the use of their ultrasound device in dentistry or in association with a patient's



teeth. A dental probe must meet the same requirements as all dental tools used in a patient's mouth – they are made from a material such as stainless steel or suitable plastics, and, if not disposable then they must be compatible with sterilization procedures. (See Applicants' published application, paragraph 59.) Barnes et al. do not disclose that the stylus 122 is made of a suitable material, that it is compatible with sterilization techniques, or that it is disposable. Furthermore, the stylus 122 of Barnes et al. is not suitable as a periodontal dental probe since it does not have a graduated end. See Applicants' figure 8 for an example of a periodontal probe - the graduated periodontal probe 805 is clearly distinguishable from a stylus 815.

In view of the above remarks, Applicants respectfully assert that claims 15 and 17 are allowable over Barnes et al.

G. Patentability of Dependant Claims 21 and 22

Further consideration will now be given to the patentability of dependent claims 21 and 22. The Office Action refers to figures 9A and 9B of Jung et al. in support of a finding of obviousness. Jung et al. disclose the use of a touch screen to provide "soft switches" for calibration of an optical instrument (figure 9A), for input of data (figure 9B), etc. The optical instrument of Jung et al. is used to shade match teeth or dental restorations. (See Jung et al. paragraphs 53-56.) However, Jung et al. do not disclose routines for either periodontal examination or dental charting and do not indicate that their optical instrument

can be utilized in either of these procedures. (For reference, note that numerous examples of periodontal examinations and dental charting are provided in Applicants' specification.)

In view of the above remarks, Applicants respectfully assert that claims 21 and 22 are allowable over Barnes et al. in view of Jung et al.

H. Patentability of New Independent Claim 53

As discussed above, new independent claim 53 is derived from claim 1 as originally filed, with more detail of the head included. An intraoral dental tool with both a display and a mirror, the mirror being positioned centrally within a rigid pan, is claimed. Barnes et al. do not disclose a mirror, both a mirror and a display, or the claimed configuration. The discussion regarding the patentability of dependant claim 7 applies here. Furthermore, Barnes et al. provide no motivation for, and do not suggest the desirability of, including a mirror on the head of the tool. Also, Barnes et al. do not disclose a cover, for hermetically sealing the circuit board within the rigid pan, as claimed by Applicants.

In view of the above remarks, Applicants respectfully assert that independent claim 53, and its dependent claims are allowable over the cited art.

Appl. No. 10/817,055  
Amendment dated July 28, 2006



Applicant respectfully requests that a Notice of Allowance be issued for this application.

Date: July 28, 2006

Respectfully Submitted,

A handwritten signature in cursive script, reading "J. M. Macaulay", written over a horizontal line.

John M. Macaulay  
Reg. No. 44,886

John M. Macaulay  
2324 Temple Drive  
Davis, CA 95616  
Tel. No. (530) 297 5810

**CERTIFICATE OF MAILING**

I, John M. Macaulay, hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on July 28, 2006.

A handwritten signature in cursive script, reading "J. M. Macaulay", written over a horizontal line.  
John M. Macaulay